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PATENT APPLICATION
Mo-5494
LeA 32,524

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#13/000
07.9.02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF

THOMAS ECKEL ET AL

SERIAL NUMBER: 09/485,288

FILED: FEBRUARY 7, 2000

TITLE: FLAME RESISTANT ABS
POLYCARBONATE MOULDABLE
MATERIALS

) GROUP NO.: 1714

)

)

) EXAMINER: V. HOKE

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APPEAL BRIEF

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JUN 27 2002

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

This Brief, submitted in triplicate, is an appeal from the Final Office Action dated July 11, 2001 rejecting Claims 1-6, 8-10, and 15-17. In an Advisory Action dated January 23, 2002, the Examiner maintained the rejection. A separate Petition for Extension of Time is being filed simultaneously herewith.

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents Washington, D.C. 20231, on 6/11/02

Aron Preis, Reg. No. 29,426

Date

Name of applicant, assignee or
Registered Representative

Signature
June 11, 2002
Date

I. REAL PARTY IN INTEREST

This application has been assigned to Bayer AG by the named inventor prior to filing in the U.S. Patent and Trademark Office. The real party in interest is therefore Bayer AG.

II. RELATED APPEALS AND INTERFERENCES

Appellants are not aware of other appeals or interferences that will directly affect or be directly affected by, or has bearing on the present appeal.

III. STATUS OF CLAIMS

Claims 1-6, 8-10 and 15-17 are pending but stand rejected; there is no indication that Claim 18 added in the amendment filed May 23, 2001 has been considered. All the claims are the subject claims of this appeal.

IV. STATUS OF AMENDMENTS

A response after Final Rejection, including no amendments, was filed on January 11, 2002.

V. SUMMARY OF THE INVENTION

The invention is directed to a thermoplastic molding composition, the essential components of which are

poly(ester)carbonate,

a graft polymer that contains a graft base the particle size (d_{50}) of which is 0.20 to 0.35 μm ,

a phosphorous component that includes a mixture of at least one mono-phosphorous compound and at least one oligo-phosphorous compound, and fluorinated polyolefin.

The invention resides in the finding that the mechanical properties of the composition critically depend on the particle size of the graft base and on the compositional makeup of the phosphorous component.

VI. ISSUES

The issue is whether the combined disclosures of Japanese Patent No. 07-11119 (Abstract)- herein JP'119- taken with Lee (U.S. Patent 5,674,924), Kakegawa et al (U.S. Patent 5,455,292) and Nishihara et al. (U.S. Patent 5,900,446) render the claimed invention unpatentable under 35 U.S.C. 103(a).

VII. GROUPING OF CLAIMS

The claims do not all stand or fall together. Claims 4 and 18 are directed to embodiments that require the claimed composition to include a thermoplastic vinyl copolymer as a further component. As argued more fully below, the cited Lee document teaches away from including such copolymer in the referenced composition.

VIII. ARGUMENTS

JP'119 disclosed a composition containing polycarbonate, a graft polymer of conjugated diene rubber having an average grain size of 0.15 to 0.35 micron and an aromatic diphosphate conforming to a formula and PTFE. The composition is said to be fire resistant as well as shock and heat resistant. Mixtures of phosphates are not disclosed. The structure of the diphosphate disclosed in JP'119 does not describe the phosphorous component entailed in the presently claimed composition.

Lee disclosed a flameproof composition containing polycarbonate, a specially structured ABS, a phosphate compound conforming to a specific formula and perfluoroalkane polymer. It would first be noted that Lees' phosphate conforms to a structural formula – column 3, line 10 - that is completely different from the structural formula of JP'119. Moreover, there is nothing in Lee to point to the presently claimed particle size.

In arguing Lee's relevance in the present context, the Examiner stated – Final Rejection, starting at the last sentence in page 2 – that

"Hence utilizing the blend in lieu of the oligomeric phosphate per se of the primary reference in a PC/polystyrene blend wherein the grafted styrene component contains a diene rubber having a particle size as small as 0.1 micron and a glass transition temperature lower than 0°C is *prima facie* obvious".

Since Lee's phosphorous compounds are structurally different from the ones in JP'119 there is no basis for combining these references at all much less for projecting the properties of a composition resulting from the impossible combination.

Lee (in column 2, lines 4 -12 and column 4, lines 18 –2 0) teach away from including the styrene-containing copolymer and as such has no immediately apparent bearing on the patentability of the compositions of Claims 4 and 18 wherein required is the inclusion of such copolymer.

Kakegawa disclosed a flame-retardant composition that contains polycarbonate resins and a phosphoric acid ester. Since Kakegawa's phosphorous compounds are structurally different from the ones in JP'119 there is no basis for combining this document with the primary reference. Moreover, nothing in the Kakegawa document can validly be seen as disclosing the instant limitation respecting the particle size of a graft polymer.

Nishihara disclosed a composition said to have improved impact strength and high melt flowability that contains polycarbonate, a rubber modified styrene polymer having particle size of 0.1 to 5.0 microns, and a compatibility agent. Permissible functional additives including flame-retardants are mentioned and among these, mixtures of phosphates are said to be preferred.

Since the primary reference, JP'119, disclosed a phosphorous compound that differs structurally from the phosphorous compounds of the secondary references, the Appellants respectfully assert that the cited documents do not combine at all much less in a manner rendering the present claims *prima facie* obvious.

Yet even if the *prima facie* case were in fact made, the experimental evidence presented in the Declaration by Dr. Eckel clearly point to the criticality of the particle size in the context of the invention. Attention is directed to the properties of the three compositions reported in the Declaration. The compositions differed only in the particle sizes of their included graft polymers. The results show that the composition, in accordance with the invention – Example A; particle size 0.3 microns- features higher tensile modulus, higher tensile strength and greater resistance to stress cracking than do corresponding compositions where the particle sizes were outside the claimed range – Example B where the particle size was 0.4 microns and Example C wherein particle size was 0.19 microns. This dependence of the properties of the composition on the tested parameter has not hitherto been described or suggested by the cited references.

Appellants respectfully submit that the results rebut the allegation of obviousness even if the cited reference were properly combined for the *prima facie* case.

Conclusion

Appellants submit that rejection is in error and respectfully request that the rejection be reversed and that Claims 1-6, 8-10 and 15-17, all the claims in the application be allowed.

Respectfully submitted,

By _____



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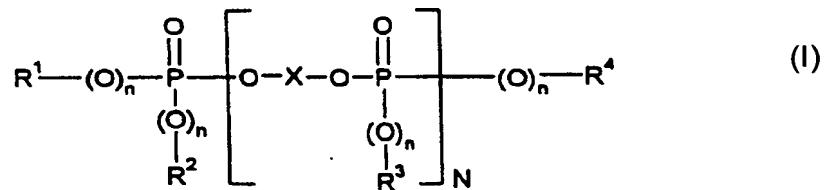
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APPENDIX

CLAIMS ON APPEAL

1. Thermoplastic, flame-retardant moulding compositions, containing
 - A. 40 to 99 parts by weight of a thermoplastic polycarbonate or polyester carbonate,
 - B. 0.5 to 60 parts by weight of a graft polymer of
 - B.1 5 to 95 % by weight of one or more vinyl monomers on
 - B.2 95 to 5 by weight of one or more graft bases with glass transition temperatures < 0°C and an average particle size (d_{50} value) of 0.20 to 0.35 μm ,
 - C. 0 to 45 parts by weight of a thermoplastic vinyl copolymer
 - D. 0.5 to 20 parts by weight of a mixture of at least one mono- and at least one oligo-phosphorus compound of general formula (I)



wherein

R^1 , R^2 , R^3 and R^4 , independently of each other, each denote a C_1 to C_8 alkyl which is optionally halogenated, a C_5 to C_6 cycloalkyl, C_6 to C_{20} aryl or C_7 to C_{20} aralkyl, which are each optionally substituted by an alkyl, and/or by a halogen,

n denotes 0 or 1, which are independent of each other,

N denotes 0 to 30, and

X denotes a mono- or polynuclear aromatic radical containing 6 to 30 C atoms, and

E. denotes 0.05 to 5 parts by weight of a fluorinated polyolefine.

2. Moulding compositions according to Claim 1, which contain 40 parts by weight of component B and 0 to 30 parts by weight of component C.

3. Moulding compositions according to Claim 1, wherein the average particle size d_{50} of component B is 0.25 to 0.30 μm .

4. Moulding compositions according to Claim 1, wherein the ratio by weight of components B:C is between 2:1 and 1:4.

5. Moulding compositions according to Claim 1, which contain 10 to 90 % by weight of at least one monophosphate compound of formula (I) and 90 to 10 % by weight (with respect to the total amount of phosphorus compounds in each case) of at least one oligophosphorus compound of formula (I).

6. Moulding compositions according to Claim 1, wherein N in formula (I) has an average value of 0.3 to 2.0.

8. Moulding compositions according to Claim 1, which contain up to 35 % by weight, with respect to the total moulding composition, of at least one flame retardant which is different from component D.

9. Moulding compositions according to Claim 1, which contain 1 to 18 parts by weight of component D.

10. Moulding compositions according to Claim 1, wherein graft base B.2 is a diene rubber, an acrylate rubber, a silicone rubber or an ethylene-propylene diene rubber.

15. The molding composition according to Claim 1 wherein monophosphorus compound of formula (I) is at least one member selected from the group consisting of tributyl phosphate, tris-(2-chloroethyl) phosphate, tris-(2,3-dibromopropyl) phosphate, triphenyl phosphate, tricresyl phosphate, diphenyl cresyl phosphate, diphenyl octyl phosphate, diphenyl-2-ethyl-cresyl phosphate, tri-(isopropylphenyl) phosphate, halogen-substituted aryl phosphates, methylphosphonic acid dimethyl ester, methylphosphonic acid diphenyl ester, phenylphosphonic acid diethyl ester, triphenylphosphine oxide and tricresylphosphine oxide.

16. The molding composition according to Claim 1 further containing a very finely divided compound comprising an element from main groups 1 to 5 or from subgroups 1 to 8 of the periodic table of the elements, in combination with at least one element selected from the group consisting of oxygen, sulphur, boron, carbon, phosphorus, nitrogen, hydrogen and silicon.

17. The molding composition according to Claim 1 which further contains at least one additive selected from the group consisting of stabilizers, pigments, demoulding agents, flow enhancers and anti-static agents.